

## The Variations of *Sagittaria subulata*

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The phase of *Sagittaria subulata* which occurs in shallow pools in west-central Florida and elsewhere on the southern coastal plain is considerably different from the plant of tidal shores in the north-eastern states. The southern plant is larger and often more robust; it also tends to have ovate-elliptical foliage blades. I have distributed specimens of this from Citrus County, Florida, under a manuscript name which now requires validation.

As here interpreted, *S. subulata* comprises two subspecies which are markedly ecologically correlated and somewhat geographically distinguished. These differ as follows:

- A. Plants small, 3–15 cm. high, or very slender and elongate; phyllodia not blade-bearing, in the typical condition usually less than 10 cm. long and always less than 0.3 cm. wide; beaks of achenes 0.3–0.4 mm. long.....*S. subulata* ssp. *typica*
- AA. Plants large, often robust, 10–45 cm. or more high; phyllodia 10–40 cm. or more long and 0.3–1 cm. wide, either without or with ovate-elliptical blades; beaks of achenes 0.2 mm. long.....  
*S. subulata* ssp. *lorata*

*S. subulata* (L.) Buchenau, ssp. *typica* (*Alisma subulata* L., Sp. Pl. 1: 343. 1753). This is a plant of tidal mud flats, ranging from Massachusetts south to northern Florida. The var. *gracillima* (Wats.) J. G. Smith seems to be a slender, elongate phase which occasionally occurs in deep water.

*S. subulata* ssp. *lorata* (Chapm.) comb. nov. (*S. natans* Michx., Fl. Bor. Am. 2: 190. 1803 (not Pall., 1776); *S. natans* var. *lorata* Chapman, Fl. So. U. S. 449. 1860; *S. subulata natans* (Michx.) J. G. Smith, N. Am. Sp. Sagittaria and Lophotocarpus, 18. 1894; *S. lorata* (Chapm.) Small, No. Am. Fl. 17: 52. 1909; *S. stagnorum* Small, Man. Southeast. Fl. 24. 1933; *S. subulata* var. *lorata* (Chapm.) Fernald, Rhodora 42: 409. 1940).

According to Small (1933), the achenes of the plants which he designated as *S. stagnorum* and *S. lorata* are larger, while the beaks of the achenes are shorter than in *S. subulata*. In the achenes measured by me, the beaks were 0.2 mm. long in ssp. *lorata* and 0.3–0.4 mm. in ssp. *typica*. In considering *S. subulata*, *S. natans* and *S. lorata* to be conspecific, the opinion expressed here concurs

with that of Fernald (1940). The vars. *natans* and *lorata* are now placed together because they seem to be phases of a more robust southern subspecies in which the leaves may be either with or without blades. The widely distributed collection of *A. H. Curtiss*, no. 6536, from a shallow stream near Jacksonville, Florida, affords a good example of specimens intermediate between vars. *natans* and *lorata*. In this collection, some of the leaves on the same plants are blade-bearing, while others are long and ribbon-like, rather abruptly tapering at the tips. Since plants with blades occur in the same region and even in the same habitats as those without blades, and since the degree of stoutness appears not to be correlated with the presence or absence of blades, there seems little basis for separating these populations. Observation of a series of specimens in the herbaria at Cornell University indicates complete intergradation without geographic, ecologic or genetic barriers.

The ssp. *lorata* is a plant of pools and streams in Florida and coastal Georgia and South Carolina. As var. *natans*, Fernald (l. c.) reports it occurring as far north as southeastern Virginia.

#### Literature Cited

- Fernald, M. L. 1940. *Sagittaria subulata*, in A century of additions to the flora of Virginia. *Rhodora* 42: 407-409.  
 Small, J. K. 1933. *Sagittaria*, in Manual of the southeastern flora. p. 22-26.

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## Chile Tarweed East of the Mississippi

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A glance through the various current manuals of the flora of North America east of the Rocky Mountains soon shows that the Chile Tarweed (*Madia sativa* Molina) is not recorded in Britton and Brown's "Illustrated Flora of the Northern United States," the seventh edition of Gray's "New Manual of Botany," Small's "Manual of the Southeastern Flora," or Rydberg's "Flora of the Prairies and Plains of Central North America." We must go to the manuals of far western botany to find it recorded and de-